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UNITED STATES NAVY
Medical News Letter

Vol. 45 Friday, 16 April 1965 No. 7



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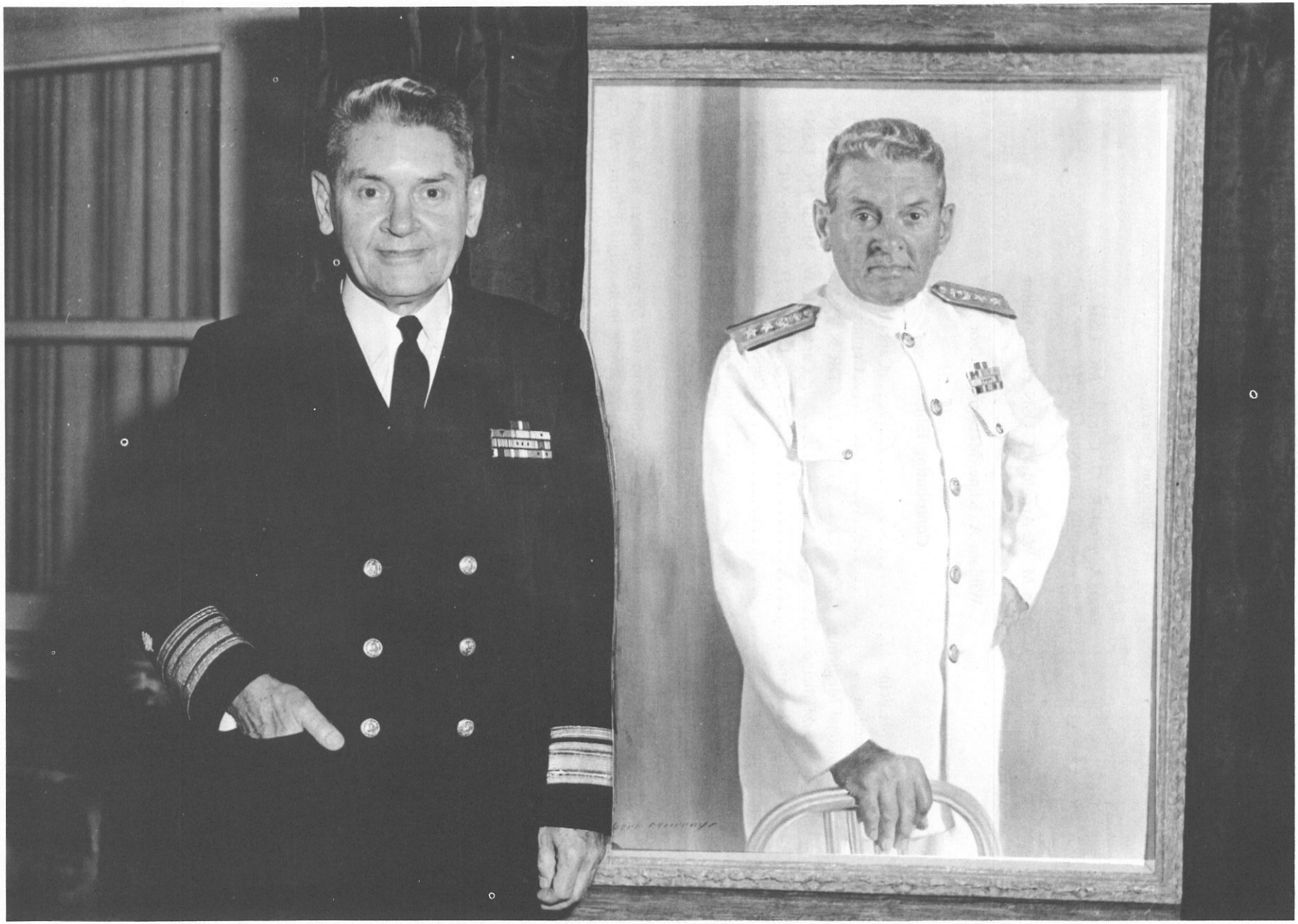
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HISTORICAL SOCIETY PRESENTS PORTRAIT OF ADMIRAL KENNEY

A portrait of RADM E. C. Kenney was presented by RADM F. M. Kyes, Chairman, Medical Department Historical Society, as the highlight of a Farewell Party for the former Surgeon General.

The Society commissioned the painting of the portrait in order to honor and memorialize Admiral Kenney for his numerous and eminent contributions. The artist was Mr. Albert K. Murray of New York City, who is one of the country's leading portrait painters.

The Secretary of the Navy, Hon. Paul H. Nitze, accepted the portrait as a gift to the Department of the Navy. It will be permanently exhibited, together with portraits of other Surgeons General, at the National Naval Medical Center.



United States Navy
MEDICAL NEWS LETTER

Vol. 45 Friday, 16 April 1965 No. 7

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: The U.S. Naval Hospital, Corpus Christi, Texas (Official U.S. Navy Photograph) was commissioned on 1 July 1941 and at that time had accommodations for 545 beds.

Located eleven miles from downtown Corpus Christi this hospital occupies 65.8 acres of land within the confines of the U.S. Naval Air Station.

During Fiscal Year 1964, there were 3,286 admissions, to the hospital and some 55,000 outpatient visits. The pharmacy Service filled approximately 122,000 prescriptions. Laboratory procedures performed totaled 81,027 tests. Radiological Service technicians made 45,255 x-rays and 1,066 fluoroscopic examinations. Births totaled 551 for the year.

On 1 February 1964 a Regional Data Processing Center was activated and now includes: patient statistical data, workload data, stocking level data for supplies and cost accounting for Food Service.—Editor.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

WHAT'S NEW IN THE MANAGEMENT OF TRAUMA*

CAPT B. Eiseman, MC USNR, Professor and Chairman, Department of Surgery, University of Kentucky Medical School, Lexington, Kentucky,

INTRODUCTION

The management of battle casualties is the single most important professional duty that distinguishes the medical corps of the armed services from their civilian professional colleagues. In times of peace this fact is often neglected. The disastrous medical experiences so common in the opening months of very new armed conflict attest to this senseless historical repetition. This problem and challenge now is more significant than ever before, for the conscientious medical officer must not only remember what was standard procedure for treatment of the wounded one-conflict ago, but also must try to remain current with the voluminous surgical and research literature. General medical officers or specialists in fields other than surgery cannot hope to remain intelligently critical of the latest suggestions for the management of the injured.

In subsequent issues of this periodical various civilian authorities (many of them reservists) will be asked to review in a brief and critical manner the current status of a new or controversial subject pertaining to the treatment of the injured. The reviews will be personal evaluations of the field in which the author is expert. They will provide a few key references but in the main will aim to provide a concise statement concerning a new method of casualty management; the physiologic background for its use; a critical evaluation of the laboratory and clinical data supporting its employment; and finally, a personal evaluation by the author of the role this new therapeutic modality might play in the future management of the injured.

LOW MOLECULAR WEIGHT DEXTRAN

As a plasma volume expander, dextran is well known to physicians caring for the injured. The dextran which has been clinically available for the past decade (the so-called Swedish-American clinical dextran) has an average molecular weight of 75,000. Its plasma volume expanding effect results from its oncotic activity. Chemically, dextran is a long chain glucose polymer produced by the action of a bacterium, *Leuconostoc mesenteroides,* on sucrose. The crude dextran so produced ishydrolyzed, purified and fractionated to a particular molecular weight range.

Following World War II Gronwall and Ingelman noted that dextran fractions of high molecular weight caused an increase in erythrocyte sedimentation rate and an increase in red cell aggregation in dogs. Later, Thorsen and Hint found that dextrans below 59,000 molecular weight were capable of reversing such aggregation. Knisely had noted a similar phenomenon, which he termed sludging, to occur in the microcirculation of animals following various types of injury. Recently, Hardaway has emphasized the role these cellular aggregates (as microthrombi) might play in the pathogenesis of shock. He and others have recently directed attention to the importance of tissue perfusion at the cellular level in the etiology of shock.

Following the observation that erythrocyte aggregation occurs after many types of bodily insult and that such aggregates could be prevented or reversed by the addition of the lower molecular weight fractions of dextran, there was interest in the use of such an agent in various clinical situations where an increase in tissue perfusion was required. A commercial laboratory in Uppsala Sweden prepared a 10% intravenous infusion solution of dextran having an average molecular weight of 40,000 with 90% of the fractions being in the range of 10,000 to 80,000. It is dissolved in either normal saline or in 5% dextrose in water.**

Dextran–40,000, like the earlier clinical dextran (dextran–75,000), is a hyperoncotic solution

* First of the new series of articles announced in the Newsletter Vol. 45, No. 6 of 26 March 1965.

** Rheomacrodex ® (dextran–40,000)

which acts to draw water into the vascular compartment. The plasma expansion produced by dextran–40,000 is actually greater that that produced by dextran–75,000 but, because of the more rapid renal clearance of the smaller molecules, this effect is of shorter duration. Gelin has noted that 50% of dextran–40,000 is cleared within 3-5 hours whereas only 35% of dextran–75,000 is cleared in the same interval.

The unique therapeutic properties of dextran–40,000 result from its ability to promote blood flow when such flow is decreased as a consequence of injury. It asserts such an action in at least two ways. First, by reason of its oncotic activity it draws water into the vascular compartment, thus diluting the suspension of erythrocytes. With a lowered hematocrit there is less resistance to flow. The second mechanism by which dextran–40,000 lowers vascular resistance is by its ability to decrease or prevent erythrocyte aggregation. Following trauma, for resons by no means clear, the erythrocytes and other formed elements in the blood become sticky. By counteracting this, dextran–40,000 again reduces the resistance to flow.

Since 1957 there have been numerous laboratory and clinical studies of dextran–40,000. It has been clinically evaluated in various types of shock where it is intended to increase perfusion of the vital tissues in vascular surgery to prevent the formation of thrombi with small vessel grafts or protheses in the heart-lung machine to prevent the formation of red cell aggregates which impede flow as well as to diminish the destruction of platelets which occurs during use of the pump, in cold injury, organ perfusion, various arterial insufficiencies, and many others. Many of the clinical studies have been *uncontrolled* and the therapeutic effects of dextran–40,000 have been difficult to evaluate objectively. In general, the reported studies have been enthusiastic but confirmatory data of the superiority of dextran–40,000 over other available treatment methods is too seldom seen. In some clinical trials control infusion of dextran–75,000, 5% dextrose in water and normal saline should be employed.

Unlike dextran–75,000 the low molecular weight dextran does not interfere with blood typing or cross-matching. Also, there is *apparently* no clinically significant effect on bleeding time so long as the manufacturers dosage recommendations are followed.

CURRENT STATUS

Dextran–40,000 has not yet been approved by the Food and Drug Administration and is therefore available only for investigational use. While the physician and surgeon should be aware of the unique properties of this new material, there is still a need for more controlled evaluations of it to establish its proper therapeutic usefulness. It is a substance of potential clinical value but there is insufficient evidence at this time to advocate its general use in the management of the injured.

SPECIAL ARTICLES

WHICH WAY DID THEY GO?— TAGGED SPECIMENS AID BIOTRACKING STUDIES

Submitted by CDR H. D. Baldridge MSC USN, Naval Medical Research Institute, Bethesda, Maryland 20014.

The migratory habits and number distribution of wildlife are best studied by means of observations on tagged or marked specimens which mingle freely in nature with others of their kind. Each year biologists band, tag, or otherwise mark thousands of animals and release them under controled conditions at known geographical location. Recapture of these specimens and the notation of time and location provides data on ranging distances and speeds. Of interest to the Navy in particular are those tagging pro-

grams associated with the fishes and birds of the sea. It is the purpose of this article to call attention to two such current programs being conducted in the realm of the seas and to invite the cooperation of Navy personnel throughout the world.

It is interesting to note that during the 19th century infancy of the science of Marine Biology, medical department personnel serving aboard ships of the United States Navy were responsible for gathering much of the data on natural history of the oceans used by American zoologists of that time. Research on the ecology and behavior of animals of the sea continues to welcome and profit from observations made by the trained eyes of shipboard personnel of the Navy.

SHARKS—The Shark Research Panel of the American Institute of Biological Sciences is currently conducting an International Shark-Tagging Program under the sponsorship of the Biology Branch, Biological Sciences Division, of the Office of Naval Research. Study of the basic biology of sharks has been receiving a substantial amount of attention in recent years, and experimental or laboratory work on sharks may be expected to bring to light many new bits of information that will help in understanding them. But this is not enough. Information is needed on the distribution habits and on the movements of sharks in their natural environment. For practical reasons it is a matter of great interest to learn more about the larger species.

Probably the best and fastest way to obtain the kinds of information needed is the tagging and releasing of tagged sharks. If a tagged shark is caught a second time, information is added to the store of knowledge about sharks. How much is learned depends to a great degree upon the quality of the records that are kept and made available in a data pool. It has been estimated that about 2500 sharks of various species were tagged last year in waters all over the world.

Navy personnel, particularly off-duty crew members ashore and afloat who fish for a hobby or pastime, might be in a position to provide some of the most important and informative returns. For the return of an AIBS tag from a captured shark, along with the information requested on the tag, the Shark-Tagging Information Center will forward a formal certificate of acknowledgement of assistance along with the standard tag reward of one dollar.

Efforts of the Shark Research Panel tagging program have been designed to stimulate interest in shark tagging and to assist in obtaining returns by direct communication with individuals, fishing clubs, and industrial operations likely to be of assistance in catching tagged sharks. In addition, a bimonthly newsletter is distributed to publicize tagging activities and other matters of interest to investigators, cooperators, and fishermen. Assistance is also available to cooperators in obtaining satisfactory identification of sharks tagged or recaptured. Tags of standard design are available to approved applicants, and reasonable assurance of priority in data publication is extended to cooperators and investigators.

Requests for information concerning this program and the availability of tags should be directed to Stewart Springer International Shark-Tagging Program, American Institute of Biological Sciences, 3900 Wisconsin Avenue N.W. Washington, D. C. 20016.

SEABIRDS. Hundreds of thousands of far-traveling ocean birds of many kinds are being captured, marked, and released on mid-Pacific islands in a widespread study of seabird migration by the Smithsonian Institution, Washington, D. C. Although it is known that some kinds of birds perform remarkable annual migrations of 10,000 miles or more over the North and South Pacific Oceans, the regular travels of most species are unknown or poorly understood.

To learn more about the migration of seabirds, Smithsonian ornithologists have captured and marked over 300,000 birds of 28 different kinds in the Central Pacific with standard, numbered, United States Fish and Wildlife Service aluminum legbands. Of these, over 60,000 have been marked with 4-inch colored plastic leg-streamers.

Anyone coming into the possession of a banded dead bird in the Pacific or Indian Ocean areas is asked to cooperate by returning the band, together with the time and place of recovery, as instructed on the band. For live birds, only the band number together with time and place of capture need be sent to the directed address, after which the bird should be liberated so that its further travel may be traced.

Anyone sighting a bird with a colored leg-streamer anywhere in the Pacific or Indian Ocean areas is asked to cooperate by recording the name or description of the kind of bird wearing the streamer, the color of the streamer, the date seen, and the latitude and longitude or approximate location of the sighting. All information on birds with colored leg-streamers should be sent as soon as possible to the Division of Birds, Smithsonian Institution, Washington, D. C. 20560. Requests for additional information concerning the seabird-tagging program

should also be directed to this address. In return for sighting or recovery data, each cooperator will be advised where the banded or color-marked bird was tagged.

Navy personnel, particularly those of deployed operating forces, are in a unique position to greatly aid biotracking programs such as those described for sharks and seabirds. For this reason, it is asked that information concerning these programs be circulated widely. A notice in the ship or station newspaper would surely help to pass the word to local birdwatchers, beachcombers, and fishermen.

GLAUCOMA, TONOMETRY AND VISUAL FIELD TESTING

Recent changes in the Manual of the Medical Department impose the requirement for annual tonometric examination of all naval aviators 35 years of age and over. Since there are numerous hazards inherent in any glaucoma screening program, an attempt will be made to point up some of the more obvious ones not mentioned in ManMed.

The Schiotz tonometer applied to the anesthetized cornea provides a measure of intraocular pressure relative to the time the measure is taken and the scleral rigidity factor. Since there are diurnal variations in pressure and individual differences exist in adapting to fluid intake, a single measurement of intraocular pressure is not necessarily indicative of the presence or absence of glaucoma.

Recent valid studies have demonstrated that the yield of a glaucoma screening program may be doubled by performing both a visual field test and tonometry, as compared to the results obtained with tonometry alone. In fact, the report emphasized that "of the 12 with open angle glaucoma, only four had abnormal Schiotz or applanation pressure reading on the first examination (screening) and two had abnormal readings only in the remaining pressure tests. The remaining six subjects had normal values in the entire battery of pressure tests on the first examination, and only on repeated follow-up did they demonstrate evidence of hypertension. All 12 subjects were detected in the visual field test by the presence of an arcuate scotoma."[1]

Visual field tests recommended for use in conjunction with tonometry in glaucoma screening programs include (1) tachistoscopic multiple pattern visual field screening devices and (2) the tangent screen. The Federal Supply Catalog, FSC Class 6515 lists items in both categories: FSN 6515-582-0444, Tachistoscope, Visual Field Testing; and relatively inexpensive tangent screens, FSN 6515-381-0690 (Folding) or FSN 6515-381-0700 (Roller), Screen, Tangent, Eye Examining. While the multiple pattern device provides a gross estimate of the status of the visual field, and requires approximately four minutes per patient, the tangent screen provides an accurate plot of the central field but requires more time and a trained examiner. Either technique meets the requirements for visual field screening.

Contrary to the belief of many, the Schiotz tonometer is not the only instrument which provides a measure of intraocular pressure. There are several applanation type instruments which measure intraocular pressure more accurately and more consistently than the Schiotz identation type instrument. These are the electronic applanation type instruments which measure intraocular pressure more accurately and more consistently than the Schiotz identation type instrument. These are the electronic applanation devices (Mackay-Marg, Biotronics, Berkeley Instrument Co. Instruments), and the mechanical applanation unit, the Goldmann instrument which fits either the Haag-Streit or Thorpe Slit Lamps.

In addition to errors inherent in the Schiotz instrument, improper use of the tonometer, and scleral rigidity, another of the hazards of a mass screening program is the corneal damage inflicted on the unsuspecting patient through poor technique. It is recognized that in many instances in the Navy, the test is accomplished by a hospital corpsman who is often not under the direct supervision of a professional examiner. Since optometry officers who are recent graduates, and other military optometrists who have attended courses on glaucoma detection have received training in the use of the Schiotz tonometer on the eye, it is suggested that in the absence of a medical officer who has been trained in the use of this instrument the optometry officer perform the examination.

An important area which is not covered by ManMed 15-92 concerns the methods for sterilizing the tonometer. There are numerous devices on the market which can be used for maintaining some semblance of sterility of the tonometer footplate and plunger tip—the only parts which touch the eye. The various devices use ultra-violet radiation, heat,

1. Armaly, Mansour F., M.D., "Glaucoma Tests; A Population Study", Sight Saving Review, 32(3), 1962.

or chemicals for sterilization. When ether, alcohol, or benzalkonium chloride (1:3000) are used, the instrument must be carefully rinsed with distilled water. A commercially available item called "Tonofilm" may be used. This is a latex tip which is applied over the footplate of the tonometer. Use of this device is presumed to preclude bacterial contamination of the cornea by the tonometer. "Tonofilm" is a rather expensive item—$.25 each in package of 100.

In summary: (1) for maximum yield, a glaucoma screening program should include both visual field testing and tonometry (2) testing should be performed only by trained professional (3) Tonometry may be accomplished with any of several devices available (4) visual field tests may be performed using a tangent screen or a multiple pattern field testing device (5) tonometers must be kept clean, sterilized and in adjustment.

—Optometry, Code 3121, BUMED.

RHEUMATIC FEVER CONCEPTS

In persons susceptible to rheumatic fever, massive monthly injections of penicillin, rather than small daily doses, do a better job in preventing streptococcal throat infections, and sulfadiazine pills are as effective as the more expensive penicillin. The extent of permanent heart change does not depend on the number of rhumatic fever attacks; if damage is going to occur, it will be as a result of the first attack. Absence of a sore throat does not mean there is no "strep" infection; nor does the presence of one necessarily indicate "strep" infection.

These findings which refute some generally accepted concepts, resulted from a 10-year study conducted by Irvington House, a New York City voluntary agency (reported in a 1964 supplement to Annals of Internal Medicine).—Public Health Reports 80(1): 10, January 1965.

S. C. CAMPAIGN ON DISEASE

The County of Greenville, S. C., seeks to immunize all its citizens agaist poliomyelitis, DPT, and smallpox. It hopes to establish a program whereby each county resident will begin immunizations at the age of 6 to 8 weeks, complete them on schedule, and maintain them throughout life. Residents will be encouraged to make up immunizations they have missed.

As part of an investigation of a widespread fungus infection that caused 40 cases of erythema multiforme in the town of Greenwood, S. C., the Public Health Service gave high school and junior high school students skin tests. Erythema multiforme, a rare disease, is believed related to histoplasmosis.—Public Health Reports 80(1): 10, January 1965.

CLEFT PALATE CLINICAL RESEARCH CENTER

The largest clinical research center in the United States for the study of cleft lip and palate will be established at the Lancaster Cleft Palate Clinic, Lancaster, Pa., under a grant from the Public Health Service's National Institute of Dental Research.

Dr. Herbert K. Cooper, founder and director of the Lancaster Clinic, will conduct the comprehensive research program, studying the oral birth defect from its origin to its treatment. He will head a team which will probe factors that may cause cleft palate and cleft lip, evaluate surgical and dental procedures to correct the deformity and habilitate speech, and test the psychological effects on patients and their families.—Public Health Reports 80(1): 59, January 1965.

PHYSICAL EXERCISE FOR HEART PATIENTS

A research project at Donolo Institute of Physiological Hygiene in Jaffa, Israel, backed by the Vocational Rehabilitation Administration, Department of Health, Education, and Welfare, seeks to get heart patients back on the job by having them engage in physical exercise.

Daniel Brunner M. D., its director, says that surveys in Israel have indicated that incidence of heart attacks in sedentary workers was three times greater than among nonsedentary groups subjected to similar diets and living conditions on an Israeli kibbutz, or communal farm. Followup studies, he says, show that ex-patients in hard-labor jobs had a greater survival rate then those who were sedentary after their attacks.

Researchers in the present project are doing larger-scale followup to buttress earlier findings. In addition the project is developing a course of gradual-physical training for about 100 heart patients, first with exercises and subsequently with sports.

Mary E. Switzer, U. S. Commissioner of Vocational Rehabilitation, comments that "This project like many others the Vocational Rehabilitation Administration is backing in nine foreign countries, is a good example of how VRA can work to benefit the people of foreign lands, while, at the same time, gaining insight into problems which are of the utmost importance in rehabilitation work here at home."—Public Health Reports 80(1): 46, January 1965.

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15 February 1965

Rear Admiral E. C. Kenney MC USN
Surgeon General
Bureau of Medicine & Surgery
Department of the Navy
Washington 25, D. C.

Dear Admiral Kenney:

On 12 March 1965, the U. S. Naval Hospital, Yokosuka, Japan, will hold commencement exercises for the sixteen Japanese interns who will have successfully completed their year of internship training on that date. These young physicians were specifically recommended by the Dean and the leading professors of their medical school. Thereafter, they were representatives of the 42 successful candidates for the Tri-Service Internship offered in Japan. They thus represent the most qualified of all Japanese medical students. They have not been found wanting in their year of training. It has been most gratifying to observe their professional advancement during this year. Twelve of sixteen interns have received permanent certification by the Educational Council for the Foreign Medical Graduates; the others, we predict, will be successful in a repeat examination this fall. We have also learned from them some of the interesting social and cultural customs of the Japanese, thus contributing to a very effective People-to-People Program.

It is with pleasure that I commend their action to you,

Very respectfully,

S/E. P. IRONS
CAPT MC USN
Commanding Officer

FROM THE NOTE BOOK

URGENT TRAINING NOTICE
APPLICATIONS FOR INSERVICE RESIDENCY TRAINING 1966-1967

Interested applicants for inservice residency training, should carefully review BUMEDINST 1520.10C for information concerning programs offered and procedure for submitting applications.

Deadline for submission of inservice and outservice training programs to begin in the summer and fall of 1966 is 1 July 1965. Candidates will be notified of selection or nonselection as soon thereafter as possible. Applications, submitted via chain of command, should be for the full training program as outlined in BUMEDINST 1520.10C.

Combined programs, such as in Neurosurgery, should be requested for the inservice portion first to begin in the summer of 1966, with the civilian portion to follow in a civilian institution to be determined.

Applicants are encouraged to list at least three choices of naval hospitals for location of training if such choices exist in the chosen specialty, and may feel free to write the chiefs of services for details of the training offered, if desired.

Early submission of applications is recommended to assure processing through chain of command and receipt in BuMed prior to the 1 July 1965 deadline.

—Training Branch, BUMED.

MSC OFFICERS GRADUATE

Sixteen Medical Service Corps officers were among The George Washington University graduates at the Winter Convocation in Constitution Hall, Washington, D. C., on 22 February 1965. These officers earned their degree primarily as a result of their efforts through participation in part-time, off-duty courses of instruction. In several cases however, the degree was earned as a result of a cooperative program authorized by BuMed in August 1960 with The George Washington University that provided for the establishment of an off-campus center of The College of General Studies at the U.S. Naval School of Hospital Administration, Bethesda, Maryland. Since that time, 142 Medical Service Corps officers have graduated from that course and more than 80% of those officers have completed, or are working toward, their degree.

The following officers were awarded degrees as indicated:

Master of Arts—Personnel Administration

LT Lewis E. Angelo	BUMED (Code 3142)

Master of Arts—Financial Management

LCDR Alan D. Bauerschmidt	NNMC

Bachelor of Arts—General Curriculum

*LCDR Alan D. Bauerschmidt	NNMC
LT Ronald R. Bolton	NNMC
*LT Donald E. Brouillette, Sr.	NH, Newport
*LT Joseph D. Cicero	NH, Chelsea
LT Max Leon Cooper	NH, Bethesda
LT Bruce J. Dietz	BUMED (Code 482)
LTJG Emile N. Giard	NMS, NNMC
LT James H. Herrin	BUMED (Code 13)
*LT Kenneth F. Hines	PG School, Monterey
*LT Howard D. Madison	PG School, Monterey
*LT Joseph R. Mulvey	NH, Oakland
*LT Jack A. Nelson	NNMC
LT Langston E. Richardson	NH, Quantico

* Degree awarded 30 September 1964.

Bachelor of Arts—Business Administration

LT William J. Auton	AdCom, Great Lakes
LT Charles R. Mountain	NH, Guam

All Medical Service Corps officers are urged to pursue their education which will be sponsored by BuMed under the provisions of BuMed Instruction 1500.7A. These officers should also familiarize themselves with BuMed Instruction 1520.12B which outlines the Bureau's policy in making selections for assignment to full-time duty under instruction.

The above listed officers are commended for their academic achievement, and deserve a traditional Navy "well done" for their accomplishments.

—Code 35, BUMED.

ATTENTION: HOSPITAL CORPSMEN AND DENTAL TECHNICIANS

Hospital Corpsmen and Dental Technicians who took the Officer Selection Battery Tests for the FY 66 Medical Service Corps in-service procurement program outlined in BUPERSINST 1520.15F, may obtain the result of their scores by submitting a request to the Chief of the Bureau of Naval Personnel (ATTN: Pers B-623).

CHANGE OF TITLE OF MSC SECTION

The Secretary of the Navy recently approved a change in the title of the WOMEN'S Specialist Section of the Medical Service Corps to the Medical Specialist Section. This change will allow the appointment of qualified male physical therapists, occupational therapists and dietitians in the Navy Medical Service Corps. Heretofore, appointments in these specialties have been restricted to women. To further enhance recruiting efforts for dietitians, the Navy will now sponsor qualified dietetic students during their final 24 months of professional training, including a dietetic internship. It is believed that the above changes will result in an increase in the number of physical therapists, occupational therapists, and dietitians appointed, and will permit more realistic staffing in naval hospitals for these specialties.—Medical Service Corps Division, BUMED.

MODEL ORDINANCE REGULATING AMBULANCE SERVICE

The Division of Accident Prevention of the Public Health Service, USDHEW, has reproduced "A Model Ordinance Regulating Ambulance Service" for distribution to State and local health authorities to promote uniformity and to improve local emergency medical services and facilities throughout the United States.

The ordinance was developed by the Joint Action Program of the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council. This model act covers the regulation of licensing, inspection and operation of ambulances, and sets standards or the licensing of ambulances and of ambulance drivers, attendants and attendant-drivers.

In working cooperatively with the members of the Joint Action Program, ambulance and rescue associations, and other groups concerned, the Public Health Service has been sponsoring Emergency Medical Services studies, surveys and training programs.

The ultimate goal of all the participating groups is to assure the American public of the best possible emergency medical care for the injured and critically ill.

Copies of the model ordinance may be obtained by writing to the Chief, Emergency Medical Services, Division of Accident Prevention, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D. C. 20201. (PHS, DHEW News Release, 20 Feb 1965.)

ADMIRAL McDONALD REELECTED PRESIDENT OF NAVY MUTUAL AID ASSOCIATION

The Board of Directors of the Navy Mutual Aid Association at their Annual Meeting on 19 February 1965 announced the reelection of Admiral David L. McDonald USN, as President. Other officers elected by the membership were Rear Admiral A. H. Van Keuren USN (Ret.), First Vice President; Vice Admiral V. R. Murphy USN (Ret), Second Vice President; Lieutenant General C. H. Hayes USMC third Vice President; Vice Admiral K. K. Cowart, USCG (Ret), Fourth Vice President; and Captain P. R. Engle MC USN, Vice President-Medical Director.

Elected to the Board of Directors were:

Rear Admiral L. A. Bachman USN (Ret)
Admiral Arleigh Burke USN (Ret)
Rear Admiral J. O. Cobb USN
Rear Admiral P. Corradi CEC USN

Rear Admiral J. W. Crumpacker SC USN
Rear Admiral J. B. Heffernan USN (Ret)
Captain J. W. Higgins Jr. USN
Rear Admiral W. I. Martin USN
Rear Admiral R. L. Moore Jr. USN
Captain G. D. O'Brien USNR
Captain W. H. Schleef SC USN
Rear Admiral A. M. Shinn USN
Brigadier General J. L. Stewart USMC

The Board of Directors reappointed Captain T. M. Davis USN (Ret), as Secretary and Treasurer, and Lieutenant Commander M. E. Koepke MSC USN (Ret) as Assistant Secretary and Treasurer.

Vice Admiral V. R. Murphy, USN, Ret., was continued in office as Chairman of the Finance Committee; Vice Admiral K. K. Cowart, USCG, Ret., as Chairman of the Membership Committee; and, Rear Admiral L. A. Bachman, USN, Ret., as Chairman of the By -Laws Committee.

The Chase Manhattan Bank of New York was continued as investment counsel for the Association and the Morgan Guaranty Trust Company of New York retains custody of the Association's securities. The actuarial firm of Bowles, Andrews & Towne of Richmond, Virginia, will continue to serve as the Association's actuarial advisor.

Captain Davis reported that in 1964, the total death benefit for Regular members was increased from $10,000 to $11,000 at no increase in cost. Also, an additional death benefit was established for Junior members at the Coast Guard and Naval Academies, making that total death benefit $10,000 without an increase in cost. Navy Mutual Aid membership at the end of 1964 exceeded 44,000 and the Association's assets exceeded $76,000,000.

DENTAL SECTION

MASS APPLICATION OF STANNOUS FLUORIDE CARIOSTASIS IN NAVAL PERSONNEL

RADM Frank M. Kyes, DC USN, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.*

Legendary Gordius, king of ancient Phrygia, tied an exceedingly complicated knot on the yoke of his chariot. The oracles said that the man who loosed that knot would go on to rule all Asia. This was accomplished by Alexander the Great who CUT the knot with his sword. Thus developed the term "Gordian knot"—a difficulty which can be overcome only by bold strokes. I believe that a few bold strokes applied now will solve our dilemma in Armed Forces dentistry within a few years. There are three steps we must take: two of them are in the face of cherished tradition; and the third is to conduct the research, development, test and evaluation necessary to develop an effective system for annual application of stannous fluoride in three agents in all Armed Forces personnel.

The first step was initiated ten years ago and proven valid in the limited population of the U. S. Naval Academy. The second step was initiated six years ago in the recruit population at the U.S. Naval Training Center, Great Lakes; and to date it has limited acceptance in the Naval Dental Corps. The third step is in an active problem of research, development, test and evaluation in seven selected naval activities.

PREFERENTIAL TREATMENT OF EARLY LESIONS

The U.S. Naval Academy, with approximately 4,000 members in the Brigade of Midshipmen, and an amply staffed dental department, presents an exciting story on the effect of a deliberate program of preferential treatment of early caries lesions.

* Presented by the Assistant Chief of the Bureau of Medicine and Surgery (Dentistry), and Chief of the Dental Division, before the Dental Section at the 71st Annual Meeting of the Association of Military Surgeons of the U.S., Washington D.C., 20-22 October, 1964.

Ten years ago, because of circumstances beyond the control of the dental department, dentistry at the Naval Academy temporarily became, as the Superintendent expressed it, "A crash program on the first class"—meaning the graduating seniors. It was indeed that. As one strode through the clinic, the effects of delayed treatment during the preceding three years was apparent at a glance. Extractions and pulp-cappings were frequent. Most of the cavities restored were both deep and large. The sick call each morning, consisting of patients suffering pain, frequently ran over a score and presented a daily administrative and professional problem. Because of the concentration on completing the dental treatment needs of the first class before graduation, little time was left for routine treatment of the three lower classes. It was recognized that this concentration on the first class was self-defeating in that the delay in treatment of the junior classes would permit their dental needs to progress to the same advanced stage as that of the first class.

Ten years ago, it was decided to reverse this situation. Emphasis on completion of dental treatment was placed first on the fourth class; and any additional capability of the dental department was then given to the more advanced classes, even to the extent, if necessary, of letting some seniors graduate with uncompleted work.

In less than two years, this bore fruit. Preferential treatment of minimal lesions proved so effective that all operative dentistry was accomplished in each class, and all in the form of smaller restorations. More teeth were restored. There were fewer extractions and fewer pulp-cappings. The benefit was also obtained in the dental officer distribution. In a ten-year transition, we have been able to reduce the total number of dental officers, to add the capability of a periodontist and an orthodontist, and to reduce the number of officers assigned to operative dentistry from 12 to 8.

THE CEMENT ALLOY PROGRAM

Preferential treatment of early lesions was relatively easy at the Naval Academy because it was limited to only 4,000 men whom we had available at the same place for four years. This principle could not be applied to a Navy of 850,000 men, of which 125,000 are recruits each year and who, after only nine weeks of recruit training, go on to duty in unpredictable ships and stations.

In the beginning of this paper, I said that there were three distinct steps toward an effective Armed Forces preventive dentistry program. The first step was preferential treatment of small caries lesions, even at the expense of postponing treatment of existing advanced lesions. Now we come to the second step and this one we should take—even at the expense of a cherished tradition. This step we call the Cement-Alloy Program, restorations made of equal parts of cement and alloy. The principle is not new. Kronfeld[1] and Orban[2] recommended that radical removal of carious dentin should be avoided and that cariostatic temporary restorations should be placed over remaining carious dentin to stimulate development of secondary and sclerotic dentin. This long recognized conservative procedure is currently called an "indirect pulp-capping.[3] Recent research reports have shown a higher percent of success from indirect than from direct pulp-capping.[4,5] About six years ago, at the U.S. Naval Training Center, Great Lakes, we modified this pulp conservation procedure to the use of the cement alloy restoration to arrest existing caries lesions which we would not otherwise have been able to complete in the thousands of recruits during their short nine-week recruit training period. We did this in full confidence that those cement alloys would conserve the pulp and prevent further breakdown of those teeth for up to two years; and we did this in full confidence that the dental department at each recruit's next duty station would find the pulps of those teeth in better condition and would be able to complete the restoration. In the cement alloy program, the cavities are opened up as necessary with no special attention to cavity outline. If possible, all caries is removed, and a sedative cement base is placed as necessary. When carious exposure of the pulp appears likely, an indirect pulp-capping with remaining carious dentin is recorded in the patient's record.

We have received mixed reactions to this program. Some dental officers are strongly in favor of this conservative practice; others are highly critical. I respect the opinion of those critics but I believe they are wrong. I recognize that this practice is contrary to the cherished professional tradition that each restoration must be a jewel in itself. In the Navy, the recruit input is so tremendous that we should first arrest all dental caries and then go on to finer permanent restoration. It is necessary to use some cement alloys to hold selected caries lesions at a standstill—until a subsequent dental facility will be able to complete the treatment using the cement alloy as a base when the record shows that all caries was removed; or in an indirect pulp-capping, to remove it after about six months, prior to permanent restoration.

ANNUAL APPLICATION OF STANNOUS FLUORIDE

The third important step is to develop an effective method for providing the benefits of annual three agent stannous fluoride treatment to all personnel. It will interest you that the first full year data of our clinical study at the U.S. Naval Submarine Medical Center, New London, has been completed. In 138 men, upwards of 70 per cent reduction in new DMFT (decayed, missing, filled teeth) was observed after one year, and in 50 men, after two years, upwards of 80 per cent reduction was seen. The treatment which produced this dramatic reduction consisted of stannous fluoride in three agents: a rubber cup prophylaxis using 17.5 per cent stannous fluoride in lava pumice; topical application of 10 per cent stannous fluoride; and provision of stannous fluoride dentifrice for daily home use. After independent consultants have analyzed the data, a complete report will be offered for publication.

This 70 to 80 per cent reduction was no surprise. It was forecast by the preliminary results of March 1963[6]. Those highly encouraging preliminary results led to serious thinking about how our Naval Dental Corps would be able to provide this three agent stannous fluoride benefit to all naval personnel. In this technic, the rubber cup prophylaxis takes the most chair time. If we could eliminate that 30 minutes' chair time by using an alternate stannous fluoride prophylaxis technic, we could come much closer to the capability of providing annual three agent stannous fluoride to all hands. Chemists advised us that it apparently was the burnishing of stannous fluoride on the clean enamel surface which caused the tin and fluoride uptake in the enamel. If the subject, using his own toothbrush and the stannous fluoride lava pumice mixture, could clean his enamel surfaces as well as the average dental technician using a rubber cup, then his "self-prophylaxis" should cause a similar tin and fluoride uptake. On this line of reasoning, a clinical study was conducted at the U.S. Naval Dental Clinic, Norfolk. They found that groups of ten subjects under the supervision of one dental technician, and brushing their teeth for ten minutes, were able to clean their enamel surfaces essentially as well as the average dental technician with a handpiece mounted rubber cup. This was demonstrated by the basic fuchsin stain and scoring of remaining plaque. These data have been accepted by the Journal of the American Dental Association for publication.

After this encouraging information, the Dental Research Facility, Great Lakes, initiated a study to determine the tin and fluoride uptake in enamel after self-prophylaxis, using biochemical analysis of extracted teeth. Bizarre results in the first trial apparently resulted from experimental error; and this trial is being repeated. A clinical study designed to compare cariostasis form stannous fluoride self-polishing versus rubber cup polishing, in groups of 150 men for two years, is in the stage of organization. Like our current New London study, it will take about four years to obatin statistically valid data.

At this point we need to recognize the difference between younger and older patients. As a whole, 18-25 year-old men have lesser calculus than older patients and, therefore, the self-prophylaxis might be sufficient for large numbers of them. This is less likely to be satisfactory for older subjects who require a true prophylaxis, including subgingival scaling. These older men also have increasing need for preventive periodontal treatment. Therefore, they should receive an annual complete prophylaxis and the rubber cup stannous fluoride polishing, rather than self-polishing. In my present thinking, the breaking point is probably in the man 25 years of age, with the prospect of lowering it to 24, 23, etc., as capabilities increase.

CLINICAL DEVELOPMENT

Now we might have postponed the Norfolk and Great Lakes studies until after the New London study was finished. On the contrary, just as our Navy built the Polaris in minimal time by researching several phases at the same time, we went ahead and set up two paired clinical sites for development—that is annual self-prophylaxis in men under 25 and rubber cup polishing in men over age 25, with all receiving the three agent stannous fluoride treatment. Preventive dentistry rooms are constructed. A dental technician with audio visual aids presents a lecture to up to ten patients at a time on oral hygiene and the proven benefits of stannous fluoride. Then he demonstrates self-polishing. Then the men apply a stannous fluoride polishing to themselves under his supervision. Then the topical application is made and daily use of a stannous fluoride dentrifice is prescribed. The preventive dentistry room has audio-visual equipment, rows of wash basins and associated accessories for self-polishing, as well as dental chairs for topical application—all in a dignified professional atmosphere.

Again, unwilling to wait several years for the results from our four test sites, we have gone ahead

and instituted the program at one of our naval recruit centers and at our largest Naval Dental Clinic, at Norfolk. This method enables one technician to treat fifty patients a day. At a recruit training center, 600 men can be treated in a day with almost no interruption to our 97 dental officers stationed there. It can be accomplished the first day the man is in the Navy, with no reduction in the routine dental treatment load. The benefit and hoped-for inhibition of caries begins at once.

CONCLUSION

I have not touched on oral hygiene, patient education, fluoridated water supplies, mouth guards for athletes, early cancer detection, limited radiation, and other aspects of preventive dentistry. Despite our interest in all areas of prevention, I have limited this discussion to those three basic principles which I believe are most directly important to the U.S. Navy's Preventive Dentistry Program.

I believe that the Navy can and will pull up even and manage to provide a complete dental service for the first time since World War II. The U.S. Naval Academy is an outstanding example of the benefits of preferential treatment of early lesions. From a crash program of repair, a program of too little and too late, it has gone to a fastidious and sophisticated complete dental service characterized by early treatment and the need for fewer dental officers. By the use of the cement alloy as a holding method in recruits who present an apparently insurmountable work load, we prevent caries lesions from progressing until we can restore them. Archimedes said, "Give me a long enough lever an I can move the world." Our present philosophies of preferential treatment of early lesions and the cement alloy program can go a long way toward elimination of caries in naval personnel. It is just possible that self-polishing in the three agent stannous fluoride system may put the long handle on the lever.

REFERENCES

1. Kronfeld, R.: Histopatholgy of the Teeth and their Surrounding Structures, Lea and Febiger, Phila., 1939.
2. Orban, B.: Oral Histology and Embryology, C. V. Mosby Co., St. Louis, 1944.
3. Danele, J. J.: Clinical Evaluation of Indirect Pulp-Capping: Progress Report, Abs 320, 39th General Meeting, Internat Ass for Dental Research, 1961.
4. DiMaggio, J. J. and Hawes, R. R.: Continued Evaluation of Direct and Indirect Pulp—capping, Abs 22, Proc 41st General Meeting, Internat Ass for Dental Research, 1963.
5. DiMaggio, J. J., Hawes, R. R. and Kiryati, A.: Histological Evaluation of Direct and Indirect Pulpcapping, Abs 23, Proc 41st General Meeting, IADR, 1963.
6. Scola, F. P., Nielsen, A. G. and Ostrom, C. A.: Clinical Evaluation of Stannous Fluoride, Progress Report, Abs 339, Proc 41st General Meeting, IADR, 1963.

CLINICAL SIGNIFICANCE OF DEHISCENCE AND FENESTRATIONS

J. Roy Elliott, DDS MS and Gerald M. Bowers,** BS DDS MS.*

Numerous articles have appeared in the literature relating to alveolar dehiscence and fenestration[1-9]. These anatomical defects of alveolar cortical plate are most frequently observed by the periodontist during mucogingival surgery; however, they are also encountered during oral surgery and endodontic procedures when a surgical flap is utilized. The purpose of this article is to re-emphasize the significance of alveolar dehiscence and fenestration and to review the literature regarding these osseous defects.

Definition: Alveolar dehiscence denotes the absence of alveolar cortical plate resulting in a denuded root surface while alveolar fenestration is a circumscribed defect in the cortical plate exposing facial or lingual root surface. These defects are not to be confused with osseous deformities of periodontal disease. In the case of dehiscence and fenestration, a connective tissue covering overlies the osseous lesion and is *firmly attached* to the root surface by periosteal fibers[3]. In order to reflect this soft tissue covering, considerable pressure is required to detach the tissue. In periodontal disease, there is pathological pocket formation associated with the loss of alveolar bone.

Etiology: The etiology of alveolar dehiscence and fenestration is unknown. Hereditary factors such as tooth morphology, size and positioning must be considered as possible etiologic factors. The larger the roots and the more nearly a tooth approaches the periphery of alveolar bone, the more likely the occurrence of a bony defect.

Trauma from occlusion must also be considered as an etiological factor, one that has received the greatest emphasis in the literature.

Significance: It has been shown that surgical defects and recession may result when mucogingival

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surgery is performed on teeth with alveolar defects[4,9]. A thin layer of combined cortical plate-alveolar bone proper often prevents the fenestration from occurring as dehiscence. Consequently, bone resorption in the region of a fenestration could readily produce dehiscence resulting in a postoperative defect. Fenestration may actually be a stage in the development of dehiscence, a stage enhanced by mucogingival surgery, oral surgery or apicoectomy.

Fenestrations of the lingual surface of mandibular third molars have been noted[4]. This phenomenon may explain the submandibular swelling sometimes associated with the abscessed third molar. This osseous defect of the lingual alveolar plate may also permit direct access of a root tip or the tooth itself into the submandibular space during surgical removal.

Osseous defects of the alveolar plate may present a treatment problem when apicoectomy is performed. Endodontic therapy may fail as a result of complete denudation of the root surface following a surgical flap procedure on a tooth with a fenestration or dehiscence.

A relationship seems apparent between a narrow zone of attached gingiva, high frenum attachment and alveolar defects[11]. Teeth that are prominent in the arch, such as the mandibular cuspids and first premolars, have narrow widths of attached gingiva and frequently a resultant high frenum attachment. There is also a high incidence of alveolar defects for prominent teeth or for those that appear to be set off basal bone. When this triad is observed —narrow width of attached gingiva, high frenum or muscle attachments and labially positioned teeth—the clinician should consider the possibility of either alveolar dehiscence or fenestration.

It has been stated that dehiscence is a possible contributing factor in gingival recession[12]. It would seem logical to assume that alveolar defects also contribute to the rapid advance of periodontal disease.

Incidence: A fairly high incidence of defects of the cortical plate is reported (2.4%—60.9% with an average of 20.1%). The defects are most commonly observed on the facial surfaces of the maxillary first molars and anterior teeth with the highest incidence occurring on the mandibular cuspid, one of the most common sites for mucogingival surgery. Fenestrations occur more frequently in the maxilla, whereas, dehiscence is predominant in the mandible. Both fenestration and dehiscence frequently occur bilaterally[3,4].

Diagnosis: The diagnosis of alveolar defects becomes a clinical problem since the roentgenogram is ineffective as a diagnostic tool[4]. Areas of dehiscence are not probable and cannot be palpated[5]. As previously discussed, teeth with narrow zones of attached gingiva, high frenum attachments and gingival recession should be suspected. Until better techniques are devised, diagnosis of fenestration and dehiscence will depend on experience and clinical observation.

Management: When defects of the alveolar cortical plate are suspected, it is good surgical procedure to avoid reflection of a mucoperiosteal gingival flap. This can be accomplished by making the initial incision at the mucogingival line or within the alveolar mucosa rather than detaching the gingival tissue. When this approach is not feasible, sharp dissection should be utilized and a fibrous connective tissue covering preserved over the cortical plate or root surface as the case may be.

Periodontoplastic procedures which help to avoid postoperative defects include the apically repositioned flap[10], the palatal approach to osseous surgery[8], periosteal separation[13] and the periosteal fenestration approach[14].

Summary and Conclusion:

1. A fairly high incidence of cortical plate defects has been reported in the literature (average of approximately 20%).

2. Dehiscence is predominant in the mandibular arch; whereas, fenestrations are more commonly observed in the maxilla.

3. While dehiscence and fenestrations are not regarded as periodontal disease defects, they may however contribute to the rapid advance of periodontal disease.

4. Surgical procedures exposing the alveolar cortical bone may be complicated by the presence of osseous defects.

5. Diagnosis of alveolar defects depends on clinical observation.

6. Defects were observed most frequently in regions where the anatomical shapes and positioning of teeth resulted in a thin covering of alveolar bone proper and cortical plate.

7. When this triad is observed, narrow width of attached gingiva, high frenum or muscle attachments and labially positioned teeth, the clinician should consider the possibility of either alveolar dehiscence or fenestration.

BIBLIOGRAPHY

1. Nabers, C. L., Spears, G. R., and Beckham, L. C., Alveolar Dehiscence. Texas Dental Jour 78:4, 1960.
2. Kakehashi, S., Baer, P. N., and White, C. L., Comparative Pathology of Periodontal Disease. I. Gorilla. Oral Surg., Oral Med., and Oral Path., 16: 397, 1963.
3. Stahl, S. S., Cantor, M., and Zwig, E. Fenestration of the Labial Alveolar Plate in Human Skulls. Jour Am Soc Periodontists 1:99, 1963.
4. Elliott, J. R., and Bowers, G. M. Alveolar Dehiscence and Fenestration. Jour Am Soc Periodontists 1:245, 1963.
5. Farley, R. A Clinical Study of Dehiscence and Fenestrations, Thesis. Ohio State Univ., 1962.
6. Baer, P. N., Kakehashi, S., Littleton, N. W., White, C. L., and Lieberman, J. E. Alveolar Bone Loss and Occlusal Wear. Jour Am Soc Periodontists 1:91, 1963.
7. Bohannan, H. M. The Fixed, Long, Labial, Mucosal Flap in Vestibular Alteration. Jour Am Soc Periodontists 1:13, 1963.
8. Ochsenbein, C. and Bohannan, H. M. The Palatal Approach to Osseous Surgery, II. Clinical Application. 35: 54, 1964.
9. Donnenfeld, O. W., Marks, R. M., and Glickman, I. The Apically Repositioned Flap—A Clinical Study. Jour Periodontics 35: 381, 1964.
10. Friedman, N. Mucogingival Surgery: The Apically Repositioned Flap. Jour Periodontics 33: 328, 1962.
11. Bowers, G. M. A Study of the Width of Attached Gingiva. Jour Periodontics 34: 201, 1963.
12. Elliott, J. R. Alveolar Dehiscence and Alveolar Fenestration. Special Problem in Anatomy Research Report. Ohio State Univ., 1962.
13. Corn, H. Periosteal Separation—Its Clinical Significance. Jour Periodontics 33: 140, 1962.
14. Robinson, R. E. Mucogingival Junction Surgery. Jour Calif D A and Nev D Soc 33: 379, 1957.

SMOKING AND CANCER OF THE MOUTH, PHARYNX AND LARYNX

Condict Moore, MD, JAMA 191(4), January 25, 1965

This is a study of 102 patients that implicates tobacco in the carcinogenic process more convincingly than previous studies because it approximated an ideal planned human experiment, although it was actually only an observation of a natural occurrence.

102 patients were divided into two groups. Sixty-five continued smoking after their first mouth/throat cancer. Thirty-seven quit smoking after their first mouth/throat cancer. Within approximately six years, twenty-one of the sixty-five patients who continued smoking acquired a second cancer. Only two of the thirty-seven "quitters" developed second cancers in this same period. Such a finding would be quite arresting in a laboratory study, but in a human study, it is doubly so.

Although the article points out many other factors in relationship to this study, it makes the summary that smokers who stop after their first mouth/throat cancer run only a small chance of getting another. A considerable protection granted by the quitting of tobacco in the study indicates that anyone having mouth or throat cancer, with a fair prognosis, must stop smoking. In those smokers who do get mouth/throat cancer, tobacco appears to play a necessary causative role in 90 percent of them.

AN IMPROVED SELF-CURING ACRYLIC RESTORATION AND COMPARISON WITH SILICATE CEMENT RESTORATIONS

Takae Fusayama, DDS DMSc, Hiroyasu Hosoda, DDS DMSc, and Tsugio Iwamoto, DDS DMSc. Tokyo Medical and Dental University, Tokoyo, Japan. Jour Pros Den 14(3): 537–552.

Many disadvantages of the self-curing acrylic resin restoration have been corrected by an improved technique, as presented in this article, of cavity preparation, insertion, finishing, and polishing. In a clinical test, acrylic resin surpassed the silicate cement in the significant qualities of discoloration, surface loss, fracture, adaptation, recurrent caries, and pulp injury. Marginal adaptation was superior in the silicate cement restorations. The present advantages of acrylic resin broaden the indications for use. The brush-on method permits insertion of several restorations simultaneously. This study establishes that, although acrylic resin does not fulfill all the requirements of an ideal restorative material, it offers more advantages than the silicate cement.

KNOW YOUR DENTAL CORPS

(First in a Series)

U.S. Naval Dental School, Bethesda, Maryland

The U.S. Naval Dental School is unique—the only school of its kind in the world. Unlike most dental institutions, which provide instruction in dentistry at the undergraduate and graduate level, this School is devoted wholly to advanced education for both dentists and their assistants. Its purpose is to improve the practice of dentistry by educating professional men in the most modern scientific techniques; also, to train auxiliary personnel in effective assistance procedures. Career dental officers therefore study the latest advances in the basic sciences allied to clinical dentistry, as well as acquainting themselves with the latest materials, methods, and equipment related to patient care. Similarly, dental technicians receive advanced training in dental assisting, accounting, personnel management, equipment repair, and laboratory technics.

The School was established in 1922 by Surgeon

General E. R. Stitt as the Department of Dentistry of the U.S. Naval Medical School, in Washington, D.C., where the Bureau of Medicine and Surgery is now located. The first class of five dental officers was convened on February 3, 1923, for a nineteen weeks' course of postgraduate instruction in Naval Dental Medicine. Coincidental with the convening of the dental officers' course, the first group of 10 hospital corpsmen began a course designed to qualify them to assist dental officers, to perform oral prophylaxis procedures, and to fabricate various prosthetic appliances. Instruction in these latter procedures was required to support the newly authorized prosthetic service which was introduced at the Dental School.

After being inactivated from 1932 to 1935, the School was re-established as a separate command on March 17, 1936. Since that time it has gradually increased its enrollment and extended its functions to meet the changing needs of the service. On February 6, 1942, the School became a component command of the newly constructed National Naval Medical Center, in Bethesda, Maryland. Originally, it occupied only the north wing of the Center, but within a few years its rapid growth forced it to expand most of its scholastic functions into a temporary three-story barracks-type building, which it still occupies.

From its inception, the Naval Dental School has had but little change in its threefold mission. Currently stated, this is: to conduct postgraduate and advanced instruction for Dental Corps officers in the various fields of dentistry peculiar to the needs of the naval service; to instruct and train enlisted personnel to perform duties of dental ratings; and to provide dental support to other activities of the National Naval Medical Center.

Under its Commanding Officer, the U.S. Naval Dental School is organized into nine departments. Five of these are clinical: Oral Diagnosis, Periodontics, Operative Dentistry, Oral Surgery, and Prosthodontics. The other four are educational: Officer Education, Enlisted Education, Audiovisual, and Publications. However, the officers of the clinical departments have a vital part in the educational programs, and there is a free flow of ideas and information between all staff members. There is also a free exchange of teaching talent and laboratory facilities among all units of the Center.

The core of the officer education program is the Graduate Course for dental officers who usually have about 5 to 8 years of service in the Regular Navy at the time of their selection for instruction. In this intensive 10-month program, divided between classroom, clinic, and laboratory, 28 dental officer students learn the latest advances in the basic sciences, as well as in clinical dentistry and research. The courses are conducted by experienced naval and civilian instructors, many of whom are diplomats of the dental specialty boards. Several Naval Dental School officers having appointments to the staff of the Graduate School of Georgetown University, as well as regular instructors of the University, conduct certain lectures and laboratory sessions which permit students to receive 12 hours of credit toward a Master of Science degree at Georgetown University.

Each year, approximately eight dental officers are assigned to the Dental School for residency instruction in Periodontics, Prosthodontics, Oral Surgery, Oral Pathology, Endodontics, and Oral Medicine. In addition to the Graduate Course and the residencies, the Officer Education Department annually offers 11 one-week courses in the dental specialties. These are open to all dental officers of the Armed Forces and other Federal Agencies.

The Enlisted Education Department conducts 6-month advanced courses for general and prosthetic dental technicians and a basic course for dental repairmen.

The Audiovisual Department develops plans for motion pictures, television programs, videotapes, and scientific exhibits on subjects ranging from oral hygiene to complex professional procedures, and provides technical assistance in their production. The Department also prepares slide-illustrated lectures, table clinics, and functional training aids for Navy-wide use.

The Publications Department prepares and publishes professional, technical, and informational materials for the School and for the entire U.S. Naval Dental Corps. The best known of these are the professional correspondence courses for dental officers and the three handbooks for dental technicians. Correspondence courses in dental subjects are available only in the education program of the U.S. Naval Dental Corps; therefore, the Publications Department administers these courses for all Regular and Reserve dental officers of the Armed Forces and other Federal agencies.

Clinical services range widely from basic instruction in preventive dentistry to extensive dental rehabilitation and complex facial surgery. These services also include histopathological examination of specimens for all naval dental facilities. The clinical services are supported by such research as the investi-

gation of drugs to make treatment easier and more effective, and the improvement of equipment and technics for more efficient and comfortable treatment.

Through its educational, clinical, and research programs, the Naval Dental School contributes in many ways toward the improved oral health of naval and Marine Corps personnel throughout the world.

PERSONNEL AND PROFESSIONAL NOTES

Dental Officer Presentations. CAPT Frank J. Kratochvil Jr. DC USN, U.S. Naval Dental School, NNMC, Bethesda, Maryland, presented an illustrated lecture, entitled, "Anatomy of Temporo-Mandibular Joint as it Effects Occlusion," before the Dental Science Club on 23 February 1965 in Washington, D.C.

LCDR William K. Bottomley DC USN, U.S. Naval Dental School, NNMC, Bethesda, Maryland, presented a lecture, entitled, "Problems in the Treatment of the Herpes Simplex-Like Syndrome," before the Washington Section of the International Association for Dental Research on 1 March 1965 in Bethesda, Maryland.

LCDR James E. Klima DC USN, U.S. Naval Training Center, Great Lakes, Illinois, presented an illustrated lecture, entitled, "The Preventive Dentistry Program at the Great Lakes Naval Training Center," before the Wisconsin Special Service Dentists and staff on 28 January 1965 at the Winnebago State Hospital, Winnebago, Wisconsin.

CAPT Philip J. Boyne DC USN, USS Bon Homme Richard CVA-31 presented a lecture, entitled, "A Study of Osseous Healing Following Osteotomy for the Correction of Mandibular Prognathism," before the Dental Staff of the U.S. Naval Hospital, San Diego, California on 22 January 1965.

CAPT Boynes lecture was the same paper which won the Research Award of the Year by the American Society of Oral Surgeons at Las Vegas, Nevada in November 1964.

LT Charles L. Stoup DC USN, U.S. Naval Hospital, Chelsea, Massachusetts, presented a clinical demonstration, entitled, "The Necessity for Correction of Laboratory and Restoration Errors in Complete Denture Construction," before the Massachusetts Dental Society on 18 January 1965 in Boston, Massachusetts.

LT Robert A. Lawton DC USN, U.S. Naval Hospital, Chelsea, Massachusetts, presented a lecture, entitled, "A Technic for the Construction of Post Crowns for Posterior Teeth," before the Massachusetts Dental Society on 18 January 1965 in Boston, Massachusetts.

Assignment of Personnel to Dental Technicians School, Class "A". BUPERS has advised the Dental Division that the planned input for the Class "A" school in fiscal years 1966 and 1967 will be 274 students as opposed to the 648 in fiscal year 1965.

Due to this reduction, the number of "strikers" to be ordered to the school will be reduced. Only personnel who meet *all* eligibility requirements specified in BUMEDINST 1510.6B should be utilized as strikers and/or recommended for school.

A critical shortage of personnel in the AN and TN rates exists. Men in those rates should not be utilized as strikers as it is extremely unlikely they will be authorized to attend Dental Technicians School.

Armed Forces Desert Dental Society Meeting. CAPT Harry B. McInnis DC USN, Dental Officer, U.S. Marine Corps Air Station, El Toro, Santa Ana, California hosted a meeting of the Armed Forces Desert Dental Society on 22 January 1965 at Norton Air Force Base, San Bernardino, California. Fifty-one members and guests attended the meeting from twenty-seven activities located throughout the farthest reaches of the ELEVENTH Naval District.

CAPT McInnis is a charter member of the Armed Forces Desert Dental Society. He joined the group, which formed from a nucleus of five activities, in 1951 when he was stationed at Barstow, California.

CAPT Perry C. Alexander DC USN, U.S. Naval Dental Clinic, Long Beach, California, presented a lecture, entitled, "Movements of the Condyle."

Navy Dentist Elected President of CZ Dental Society. The 35th Annual Panama Canal Zone Dental Society Meeting was held 6 February 1965 at Albrook Air Force Base, Canal Zone.The meeting was honored by the participation of a number of distinguished dentists, including Dr. Fritz A. Pierson, President of the American Dental Association. Dr. Pierson discussed several interesting activities of the ADA including: the continuous efforts to assist exiled Cuban dentists to practice in the United States; the support of Project USS Hope; and the

Association's support of the Institute of International Education, a private non-profit organization that administers many United States grants to foreign dental graduate students.

The meeting, moderated by LCOL H. J. Lord Jr. DC USAF, was held in the simultaneous translation facility of the USAF School for Latin America to accommodate the Panamanian representatives.

CAPT S. Robert Howell DC USN, 15 ND Dental Officer, was elected President of the Canal Zone Dental Society for the ensuing term.

Sub Base Dentists Assist County Dentists in National Children's Health Week. Eleven Navy Dental Officers of the U.S. Naval Submarine Base, New London, assisted the New London County Dental Association in promoting National Children's Dental Health Week, February 7-13. The theme for this year was "Heal Their Teeth—Happy Life." Equipped with a movie on Oral Hygiene, large models of teeth and toothbrushes, and pamphlets, entitled, "I must Brush My Teeth," these officers visited eleven schools in the New London-Groton area during the week for a series of lectures on the importance of dental health.

The talks emphasized the importance of proper nutrition and oral hygiene in the preservation of Dental Health. The lectures were arranged by Dr. Vincent F. Masin of the New London County Dental Association, Miss Ann Cowhey of the New London Department of Health and CAPT George O. Stead, Senior Dental Officer at the Base.

Charleston Military-Civilian Dental Meeting. CAPT William Seidel DC USN, SIXTH Naval District Dental Officer recently announced that Navy Dental Officers hosted a meeting of seventy-five Armed Forces and civilian dentists in the Charleston area. The meeting was held at the Naval Base, Charleston, and featured several clinics in addition to a showing of the Navy film Periodontal Disease—Prevention and Early Treatment. The clinicians and their presentations were: CAPT A. L. Raphael DC USN, Naval Station, "Amalgam Splints for Periodontally Involved Teeth," CDR F. M. Amman DC USN, USS Howard W. Gilmore (AS-16), "An Altered Cast Technique for Posterior Extension Partial Dentures," CDR F. A. Marmarose DC USN, USS Evergaldes (AD-24), "A Practical and Economical Method of Converting Dental Operating Chairs to Modern Contour Type," LCDR C. G. Strange DC USN, Naval Station, "The Dowel Abutment Crown."

PREVENTIVE MEDICINE

INFLUENZA AND INFLUENZA-LIKE ILLNESS

DHEW PHS Morbid & Mortal Wkly Rpt CDC Atlanta, Ga., 14(5): 41-42 & 45; 14(6): 53-55; and 14(8): 73-74, February 6, 13, and 27, 1965.

UNITED STATES: Since early January 1965, Group A influenza infections have been confirmed by laboratory methods in the following states: New England States, Pennsylvania, Missouri, Iowa, Michigan, Alabama, Kansas, Illinois (Chicago), and Georgia (Atlanta). Unconfirmed, but clinically suspect, outbreaks of influenza-like illness have been reported from Maine and Mississippi.

At present, A_2 influenza virus isolates have been recovered in New York, New Jersey, Connecticut, Pennsylvania, Missouri, Kansas, Michigan, Georgia (Atlanta), and Illinois (Chicago). All geographic areas, with exception of New England States, are well below the epidemic threshold. The new England States continue to have excess mortality at the same levels previously reported; Middle Atlantic States are within normal limits.

NEW YORK: Upper respiratory illness has been prevalent throughout the State during the past weeks. Three A_2 influenza viruses have been isolated from sporadic cases during mid-January in 2 counties.

VERMONT: Since mid-January, outbreaks of acute febrile respiratory disease with systemic symptoms have been noticed in 3 counties. Serologic confirmation of influenza A has been reported from 2 counties. Virus silation attempts are in process.

NEW HAMPSHIRE: The scattered outbreaks of influenza-like illness in New Hampshire have now been serologically confirmed as type A influenza.

MISSOURI: A_2 influenza has been identified in 2 patients in Princeton, Missouri, by hemagglutination-inhibition tests.

MISSISSIPPI: A focal outbreak of acute febrile respiratory disease occurred in the rural area of Rankin County on January 25, characterized by rapid onset, fever, chills, headache, arthralgias and upper respiratory symptoms. The first appearance of disease was in school age children (15 to 20%) with secondary cases in families being observed. Serologic confirmation of this outbreak is in process.

ALABAMA: A recent outbreak of widespread influenza, particularly affecting younger age groups, was reported during the 2nd week of February 1965 from Clarke County; the southern portion was most heavily involved. Adults were affected with an increased number of cases of pneumonia being reported. A serological survey carried out on unpaired acute and convalescent sera specimens demonstrated significantly increased levels of HI antibodies to type A influenza during the convalescent phase. Virus isolation attempts are underway.

IOWA: In mid-February, Type A influenza was serologically confirmed. Some 3 weeks ago, an abrupt outbreak of acute febrile respiratory disease developed in a small town in southeastern Iowa. A major proportion of the cases occurred among students attending a liberal arts college in the community, many of whom had returned only recently from visits in various parts of the East. Paired sera specimens from 2 cases demonstrated a rise in HI titer to influenza type A.

MICHIGAN: There has been a general increase in acute febrile respiratory disease during the past months, particularly in the Grand Rapids, Monroe, Lansing and Ann Arbor regions. Illnesses have been mainly in school children because of "spotty" school absenteeism. An A_2 influenza virus antigenically similar to A_2/Taiwan/64 has been isolated from a student where increased numbers of influenza-like illnesses have been observed in the first week of February.

KANSAS: Influenza-like illness has been observed in 5 counties so far this winter. In 2 counties the illness has been confirmed as influenza type A by CF test. A_2 virus has been isolated by the CDC Laboratory, Kansas City Field Station, from a lung tissue of a fatal case of pneumonia occurring in Kansas City.

GEORGIA: Georgia, previously unreported, has experienced a widespread occurrence of febrile disease much of it being respiratory during February. There has been serological confirmation of type A influenza and presumptive virus isolation of type A_2 influenza in several areas of Atlanta, Georgia, in mid-February.

ILLINOIS: Type A_2 influenza viruses have recently been isolated from several university students in the Chicago area.

COLORADO: Scattered occurrence of influenza-like illness has been observed in Colorado, particularly the Denver area, since mid-February. Virus isolation and serological confirmation of type B influenza was obtained from one Denver outbreak.

EASTERN GERMANY (January 1965): The World Health Regional Virus Reference Laboratory, Prague, Czechoslovakia, has reported by telephone to the WHO that outbreaks of influenza-like illness occurred in January in Eastern Germany, mainly in the northern part towards the Baltic coast. Serological evidence of infection with virus A_2, from scattered outbreaks, have been obtained and 4 strains of virus A_2 have been isolated by laboratories in Eastern Germany.

FRANCE (25 Jan 1965): Serological evidence of infection with virus A_2 was obtained in Paris and environs, as well as in the east, west and center of the country. Serological evidence of infection with virus B was obtained in Paris and its suburbs, and in the Northeast of the country (Aisne Department).

USSR (29 Jan 1965): Outbreaks of influenza were reported by telephone to the World Health Organization by the WHO Virus Reference Center in Moscow. Preliminary reports from Moscow indicated that an epidemic began in Leningrad about 9 January 1965, reached its peak about 18 January and is now declining. Thousands of cases, many in children, occurred but the incidence was less than in

the epidemic there 3 years ago. The disease was not severe.

A sharp increase in influenza-like illness has been reported from Arkhangelisk in the North, Khabarovsk in the East, and from Tallin, Riga, and Moscow.

Influenza virus A_2 was isolated from cases in Leningrad and Moscow. Primary isolations were made with some difficulty. Strains have been sent to the 2 International Influenza Centers, London and Atlanta for further study (identified as A_2/Singapore/1957).

Since December 1964, about 4 million people in the USSR have been vaccinated with live influenza vaccine. Because of the low incidence of influenza in the past 2 or 3 years in the USSR, it was thought that an epidemic might occur this year and clinics and hospitals increased their supplies of antibiotics and other drugs as a precaution.

JAPAN (Feb): Sporadic outbreaks of influenza-like illness are being reported. A strain of influenza virus A_2 has been isolated from a case in a Tokyo suburb.

RUBELLA IN CONTACTS OF INFANTS WITH RUBELLA-ASSOCIATED ANOMALIES

DHEW PHS Morbid and Mortal Wkly Rpt, CDC Atlanta, Ga., 14(5): 44-45, Feb 6, 1965.

Nine cases of rubella among medical personnel caring for infants with rubella-associated anomalies have been documented. A large proportion of children with rubella-associated anomalies excrete rubella virus, sometimes for long periods following birth, indicating that the risk of acquired infection from these children may be high.

A group at the New York University School of Medicine has studied more than 100 infants with congenital defects thought to be caused by rubella infection acquired *in utero*. An interfering agent with properties characteristic of rubella virus has been isolated from throat swabs, urine specimens and/or rectal swabs obtained from 60-70% of these patients. Although the well-recognized "classical" defects such as congenital heart disease and cataracts have been seen most frequently, more obscure conditions such as thrombocytopenic purpura and/or splenomegaly without any detectable anomaly have also been associated with viral excretion.

Questioning nursery and pediatric ward personnel who cared for these infants at hospitals throughout New York City, the authors encountered 8 nurses and 1 resident physician who had developed an illness typical of rubella with an onset of symptoms approximately 2 to 3 weeks after close and prolonged physical contact with these babies. Significant is the fact that certain of the infants excreted virus for months. For example, the defective infant was almost 9 months old at the time of contact in case 3.

Case 1. Bar., a 30-year-old married nurse, was exposed to many pregnant patients with rubella in the Spring of 1964 while working in the Obstetrics Clinic. In August 1964, she was transferred to the Premature Nursery. On 23 Nov 1964, she admitted a newborn infant with typical rubella-associated defects and cared for this infant daily thereafter. On 16 Dec 1964, she developed typical rubella manifested by a maculopapular rash, occipital, postauricular, cervical, auxillary and inguinal adenopathy, and low grade fever. The diagnosis was confirmed by isolation of virus from her throat swab on the 3rd day of rash. Rubella virus had previously been detected in throat and rectal swabs obtained from the infant.

Case 4. Dow., a 33-year-old single nurse, cared for a newborn infant with severe rubella embryopathy on 25 and 26 Oct 1964, prior to leaving for vacation. On 16 Nov, while still on vacation, she developed rubella characterized by a rash which persisted for 3 days, occipital and postauricular lymph adenopathy, and painful swelling of her interphalangeal joints and wrists. The arthritis cleared after 48 hours. Her roommate, a nurse who worked in another unit at the same hospital, developed a similar illness with rash, adenopathy and joint manifestations 14 to 16 days later. The newborn infant was shown to be excreting rubella virus in throat swab and urine specimens.

Case 8. Sha., a 28-year-old pediatric resident, was exposed on 10 Nov 1964, to a 1-month old infant with "rubella syndrome," characterized by congenital heart disease and cataracts. He examined this infant regularly until 29 Nov, when he developed rubella manifested by rash, adenopathy and back pain. Sixteen days later, his wife and child also developed typical rubella. The defective infant was still a virus-excretor when last studied at the age of 2½ months. No attempt was made to isolate virus from the pediatric resident or his family.

Two features common to the 9 cases described provide strong circumstantial evidence implicating these virus-excreting infants as the source of rubella

infection. One is the incubation period, an appropriate 2 to 3 weeks after intimate contact. The second is the low incidence of rubella in the general community at the present time.

In view of these observations, it is recommended that infants born with rubella-associated anomalies be managed with the same precautions employed for patients with rubella. It obviously is most important for women in the first trimester of pregnancy to avoid exposure to these infants.

(Louis Z. Cooper, M.D., et. al, Depts Med & Ped., New Yord Univ School Med., New York.)

HOSPITAL PERSONNEL DEVELOPING RUBELLA AFTER CARING FOR INFANTS WITH "RUBELLA SYNDROME"

Name	Occupation	Age	Sex	Time of Intimate Contact with Possible Virus-Excreting Infants	Time of Onset of Rash
1. Bar*	Nurse	30	F	November 23—December 15	December 16
2. Col.	Nurse	21	F	December 7—December 24	December 25
3. Dav.	Nurse	20	F	September 10—October 29	November 2
4. Dow.	Nurse	33	F	October 25—October 26	November 9
5. Edw.	Nurse	26	F	October 25—December 4	December 5
6. Fie.	Nurse	21	F	August 22—November 5	November 6
7. Gre.	Nurse	23	F	December 18—January 8	January 9
8. Sha.	Physician	28	M	November 10—November 28	November 29
9. Woi.*	Nurse	26	F	December 15—January 10**	January 18

* Rubella virus isolated from throat swab at time of illness.
** Infant with multiple, classical rubella anomalies and history of maternal rubella during first trimester of pregnancy.

SHELLFISH-ASSOCIATED HEPATITIS

CDC Hepatitis Surveillance Rpt 21, Pg 25-27, December 31, 1964.

All 4 of the known epidemics of infectious hepatitis associated with the ingestion of raw shellfish from commercial sources have begun in late fall. The month of peak incidence was January in 3 of these, and March in the fourth. In view of this seasonal pattern persons responsible for hepatitis surveillance on a state or local basis should intensify efforts to detect shellfish-associated epidemics at this time of year. The smallest epidemic to have been described accounted for 84 cases related to the ingestion of raw oysters from Pascagoula, Mississippi[1]. All 3 of the clam-associated epidemics involved over 100 cases each [2,3,4]. With improved techniques for detection, it should be possible to uncover smaller outbreaks, and, by means of prompt remedial action, bring about a reduction in hepatitis morbidity. It seems worthwhile, therefore, to review some of the epidemiological indices which may serve as "warning signals" for the presence of such epidemics.

1. *Age and Sex Distribution.* A shift in the age distribution of reported hepatitis cases toward a greater proportion of adults was a clue to one epidemic of the past. Analysis of the age and sex distribution in known shellfish-associated epidemics has shown a preponderance of young adult males. While age and sex data are worth monitoring because they are almost always available on a routine basis, they are, unfortunately, insensitive indicators. They are likely to reflect only epidemics of major proportions.

2. *Socioeconomic Pattern.* While raw clams and oysters are consumed to a varying extent in different areas of the United States, such raw shellfish ingestion is often a middle and upper-class phenomenon. The appearance of a number of such cases, therefore, should alert health authorities to the possibility of a shellfish-related epidemic.

3. *History of Personal Contact.* A question concerning contact with a known case of hepatitis during the 2 months prior to onset is often included on surveillance forms used by state and local health departments. An analysis of 7907 forms submitted to CDC for cases diagnosed as infectious hepatitis with onsets during epidemiological year 1963-64 is in Table 1. The responses to the question about personal contact were tabulated separately for patients who denied raw shellfish ingestion and those who had eaten raw clams or oysters during the two months prior to onset.

4. *History of Raw Shellfish Ingestion.* A question about raw shellfish ingestion should be a part of the epidemiological history obtained on adult cases. The question should specifically relate to *raw clams* or *raw oysters* during the two months prior to onset.

There is no evidence that other forms of shellfish, such as shrimp and lobster are related to hepatitis. Provided the cooking process is adequate, there is also no need to obtain information about cooked shellfish. The results of questions relating to the general habit of shellfish ingestion or to periods of greater than 2 months are difficult to interpret. If a hepatitis patient admits raw shellfish consumption on the preceding 2 months, detailed information as to the time(s) and place(s) of eating should be sought. In this way it may be possible to link several cases to a single source of supply, and thus raise the suspicion of a common source epidemic. If a routine tabulation of hepatitis surveillance data shows that more than 10% of adult cases give a history of raw clam or oyster ingestion, the suspicion of health authorities should be aroused. If the percentage exceeds 15, an investigation should begin.

TABLE I

	Shellfish Negative		Shellfish Positive	
Age Group	Number of Cases	Percent with Personal Contact	Number of Cases	Percent with Personal Contact
0–19	3374	31.8%	62	17.7%
20–39	2913	20.6%	335	6.3%
40 & over	1083	10.3%	140	8.5%
Total	7370	24.2%	537*	8.2%

* Includes cases from the 1964 clam-associated epidemic in Southern New Jersey and Greater Philadelphia area.

In all but the oldest age group a smaller percentage of shellfish-positive cases reported contact with a known case of hepatitis. Thus, if the proportion of cases with a history of personal contact is significantly lower than that shown above for "shellfish-negative" cases, the presence of an epidemic related to a common source mode of spread, possibly raw shellfish, should be suspected.

REFERENCES

1. Mason, J. O., and McLean, W. R.: Infectious Hepatitis Traced to the Consumption of Raw Oysters. Amer Jour Hyg 75: 90–111, 1962.
2. Dougherty, W. J. and Altman, R.: Viral Hepatitis in New Jersey, 1960-61. Amer Jour Med 32: 704-736, 1962.
3. U.S. Communicable Disease Center, Hepatitis Surveillance Report No. 18, March 31, 1964.
4. U.S. Communicable Disease Center, Hepatitis Surveillance Report No. 19, June 30, 1964.

DECLARATION OF HELSINKI

WHO Chronicle, WHO 19: 1, "Declaration of Helsinki. Recommendations Guiding Doctors in Clinical Research." January 1965.

Introduction

It is the mission of the doctor to safeguard the health of the people. His knowledge and conscience are dedicated to the fulfillment of this mission.

The Declaration of Geneva of the World Medical Association binds the doctor with the words: "The health of my patient will be my first consideration" and the International Code of Medical Ethics declares that "Any act or advice which could weaken physical or mental resistance of a human being may be used only in his interest."

Because it is essential that the results of laboratory experiments be applied to human beings to further scientific knowledge and to help suffering humanity, the World Medical Association has prepared the following recommendations as a guide to each doctor in clinical research. It must be stressed that the standards as drafted are only a guide to physicians all over the world. Doctors are not relieved from criminal, civil and ethical responsibilities under the laws of their own countries.

In the field of clinical research a fundamental distinction must be recognized between clinical research in which the aim is essentially therapeutic for a patient, and the clinical research, the essential object of which is purely scientific and without therapeutic value to the person subjected to the research.

Basic Principles

Clinical research must conform to the moral and scientific principles that justify medical research and should be based on laboratory and animal experiments or other scientifically established facts.

Clinical research should be conducted only by scientifically qualified persons and under the supervision of a qualified medical man.

Clinical research cannot legitimately be carried out unless the importance of the objective is in proportion to the inherent risk to the subject.

Every clinical research project should be preceded by careful assessment of inherent risks in comparison to foreseeable benefits to the subject or to others.

Special caution should be exercised by the doctor in performing clinical research in which the personality of the subject is liable to be altered by drugs or experimental procedure.

Clinical Research Combined with Professional Care

In the treatment of the sick person, the doctor must be free to use a new therapeutic measure, if in his judgment it offers hope of saving life, re-establishing health, or alleviating suffering.

If at all possible, consistent with patient psychology, the doctor should obtain the patient's freely given consent after the patient has been given a full explanation. In case of legal incapacity, consent should also be procured from the legal guardian; in case of physical incapacity, the permission of the legal guardian replaces that of the patient.

The doctor can combine clinical research with professional care, the objective being the acquisition of new medical knowledge, only to the extent that clinical research is justified by its therapeutic value for the patient.

Non-therapeutic Clinical Research

In the purely scientific application of clinical research carried out on a human being, it is the duty of the doctor to remain the protector of the life and health of that person on whom clinical research is being carried out.

The nature, the purpose and the risk of clinical research must be explained to the subject by the doctor.

Clinical research on a human being cannot be undertaken without his free consent after he has been informed; if he is legally incompetent, the consent of the legal guardian should be procured.

The subject of clinical research should be in such a mental, physical and legal state as to be able to exercise fully his power of choice.

Consent should, as a rule, be obtained in writing. However, the responsibility for clinical research always remains with the research worker; it never falls on the subject even after consent is obtained.

The investigator must respect the right of each individual to safeguard his personal integrity, especially if the subject is in a dependent relationship to the investigator.

At any time during the course of clinical research the subject or his guardian should be free to withdraw permission for research to be continued.

The investigator or the investigating team should discontinue the research if, in his or their judgment, it may, if continued, be harmful to the individual.

ANTIMICROBIAL PROPHYLAXIS FOR INDIVIDUALS WITH A HISTORY OF RHEUMATIC FEVER

The prevention of streptococcal infection in individuals who have had rheumatic fever is duscussed in the Naval Medical Publication entitled, "Treatment and Prevention of Streptococcal Disease and its Sequelae" (NAVMED P-5052-17), which is currently under revision. A portion of paragraph 7, which will remain unchanged in the revised edition, states:

"The Commission of Streptococcal Disease of the Armed Forces Epidemiological Board has recommended that individuals who have had rheumatic fever, as indicated by a valid history of rheumatic fever, or the presence of rheumatic heart disease, receive continuous antimicrobial prophylasis. Opinion varies on the length of time to continue prophylaxis after the last attack of rheumatic fever, but five years is probably a minimum. Evidence of heart damage, duty in high exposure environment and age under 40 years may indicate extension of this time."

Recruit training, service school training, sea duty, and, indeed, any situation in which men are forced into intimate living conditions, should be considered a high exposure environment.

—Communicable Disease Branch, PrevMedDiv.

LEECH REPELLENT

Some confusion evidently still exists concerning the use of repellents for personal protection from bites due to mosquitoes, black flies, deer flies, fleas, ticks, chiggers, and leeches. The standard military repellent deet, FSN 6840-753-4963, supplied in 2 ounce polyethylene bottles, is effective to varying degrees against all of the above pests. Furthermore, it is the most effective repellent available for most of these pests. See BUMED INSTRUCTION 6250.10 for further details.

In regard to leeches, both land and aquatic leeches may be encountered in certain tropical or sub-tropical areas of the world. Deet is effective, as mentioned above; however, land leeches are usually found only where the climate is warm and damp.

Therefore, deet applied to skin and clothing may be removed by brushing against wet vegetation, or by excessive sweating, requiring frequent reapplications of the repellent. Aquatic leeches present a more serious problem, because deet is washed off in water. An aquatic leech repellent consisting of a 25% deet—75% lanolin mixture has been developed for special military uses; the lanolin content resists wash-off. This mixture is not a standard stock item, however.

Deet is the recognized common name of the chemical diethyltoluamide. FSN 6840-753-4963 consists of 75% deet and 25% denatured ethanol. Deet also is the active ingredient in the better commercial repellents, usually in 15 to 50% strengths; the standard military item is a better repellent because protection time agaist biting insects, ticks, etc., is determined by the actual amount of deet present on skin or clothing. For this reason, the deet-lanolin aquatic leech repellent is effective on dry skin only for about ⅓ of the time that standard military deet is effective.

—Vector Control Section, PrevMedDiv.

KNOW YOUR WORLD

DID YOU KNOW:

That a flock of geese are the latest participants in Florida's efforts to control water weeds without chemicals?

The geese are clipping away at weeds along the lagoon banks of the Margate Sewage Treatment Plant's polishing pond. In Broward County, Florida, sea cows are being imported to clean up ponds and keep aquatic weeds under control.

No report is available as yet on the progress the British are making with the 15,000 carp they imported from Hong Kong to gobble up the weeds which clog the water inlets of a large power station on the Irish Sea coast in Lancashire. (1)

That poor design of ponds cause disease?

Recent outbreaks of encephalitis throughout the nation have focused attention on the need for rigid design control of small water-retention structures. A water management researcher from Georgia told a meeting of the American Society of Agricultural Engineers that farm ponds and small reservoirs designed to retard flood waters are ideal breeding grounds for disease-carrying mosquitoes and that a study of the mosquito potential of 22 small flood-retarding reservoirs showed all of them produced mosquitoes to some extent. In farm ponds, control is easiest when the shore line of the pond is deepened during construction. Investigations in Mississippi and Tennessee showed that there was little or no mosquito production in reservoir lakes where the shore line was deep and clean. (2)

That in India's Malaria Eradication Campaign in 1963, there were employed:

1. 550 physicians and entomologists and 34,000 spraymen.

2. 26,000 surveillance workers, each responsible for a population of 10,000 living in about 2,000 houses which were visited twice a month to detect fever cases.

3. 39 million bloodsmears were taken and examined for malaria parasites.

4. 38 million houses were sprayed with insecticides, each house with an average sprayable surface of 170 square meters, a total of 6,500 square kilometers.

5. 15,000 tons of DDT were used. (3)

That rats were responsible for scrub typhus in Thailand?

The Faculty of Tropical Medicine at the University of Medical Sciences in Bangkok, Thailand report that investigations led to isolation of *Rickettsia tsutsugamushi* from field rodents and patients. Various field rats seemed to be the main reservoir hosts. The chigger has a carrier role in transferring rickettsia from rats to humans. (Jour Trop Med Hyg 67: 215-219, Sept 1964.) (4)

That the average patient entering a mental hospital today has a 70% to 85% chance of leaving the hospital considerably improved or totally recovered within a few months. (5)

That of the 1 to 4 year-old age group of U.S. children last year 40% had not received a smallpox vaccine. (6)

That Soviets have more physicians per 1,000 population than any other country in the world?

There are presently about 500,000 physicians and 100,000 pharmacists in the Soviet Union. Soviet

medical authorities, however, state that the hygienic conditions leave something to be desired in some areas of the country. In remote districts such as Kzbek, Kirkhgisia, Patschik Republic, among others, there are no private or public baths because the water supply is either out of order or not yet available. (7)

That during 1963, 295 cases with 40 deaths and 141 carriers of diphtheria were officially reported to the Diphtheria Surveillance Unit, CDC, Atlanta, 27% less than had been reported in 1962. This decline has been continuous since the inauguration of a nationwide surveillance program. In 1921, 206,-989 cases were reported or 20.14 per 100,000 population; 0.17 per 100,000 population in 1963. Every year since 1946, when diphtheria toxoid and antibiotics became widely available, the case rate has declined, although the case-fatality ratio has increased. (8)

REFERENCES

1. Water Newsletter, 7(1): 2, Jan 8, 1965.
2. Water Newsletter, 7(1): 3, Jan. 8, 1965.
3. WHO Press Release, Pg 2, Jan 19, 1965.
4. JAMA, 190(12): 1089 (133), Dec 21, 1964.
5. Science News Letter, 86(11): 172, Sept 12, 1964.
6. Science News Letter, 86(24): 380, Dec 12, 1964.
7. JAMA, 191(1): 165, Jan. 4, 1965.
8. Diphtheria Surveillance Unit, Rpt No. 6, Dec 1964.

NOTICE

Chapter 1, "Food-Service Principles," of the *Manual of Naval Preventive Medicine* (NAVMED P-5010-1), has been revised, and distribution is anticipated in June 1965. It is recommended that individual holders of the *Manual of Naval Preventive Medicine* who have not sent in a change of address within the last year submit a change of address form to BUMED (Code 4561) in order to be assured of receiving the new Chapter 1.

RESERVE SECTION

AEROSPACE MEDICAL ASSOCIATION

The 36th Annual Meeting of the Aerospace Medical Association will be held at the New York Hilton Hotel, New York City, New York during the period 26 through 29 April 1965. A Military Section in conjunction with this meeting will be held on the above dates and each session will be at least two hours in duration.

By authority of the Chief of Naval Personnel, one retirement point may be credited to eligible Naval Reserve Medical Corps officers in attendance. Officers are requested to register with the Commandant's Representative in order that attendance may be recorded and reported.

BRONZE STAR MEDAL AWARDED TO LT RICHARD R. SHULTZ

On 21 January 1965, LT Richard R. Shultz MC USNR, was presented the Bronze Star Medal for service as set forth in the following CITATION:

For meritorious achievement during the period 12 October 1963 to 1 July 1964 while serving with Station Hospital, Headquarters Support Activity, Saigon, Republic of Vietnam. In addition to his regularly-assigned duties, LT Shultz, in his off-duty time, carried out a program of providing medical assistance to men of the Vietnamese Navy Coastal Force and their dependents. He visited Junk Division bases in remote, and, in many cases, Viet Cong infested areas to provide what was often the first professional medical treatment ever received by the paramilitary junk crewmen and their families. Although exposed to enemy gunfire on several occasions in conducting these visits, he continued to carry out his missions, winning the admiration and respect of the Vietnamese by his courageous conduct under fire. During his tour of duty, LT Shultz provided sorely-needed medical assistance to over 3500 persons, and initiated a program of regular medical visits to remote Junk Division bases which has been continued by the Vietnamese Navy. His leadership, courage, and inspiring devotion to duty were in keeping with the highest traditions of the United States Naval Service.

S/Paul H. Nitze
Secretary of the Navy

PRIORITY ON SEWAGE DISPOSAL

Sewage disposal, often the last element considered, is getting priority in a move to attract developers to an area of northern Virginia.

On county-owned land near Dulles Airport, Fairfax County authorities are building four compact, modified activated sludge sewage treatment plants designed to meet the needs of more than 10,000 persons.—Public Health Reports 80(1): 10, January 1965.

MISCELLANY

PROCUREMENT, TRAINING, AND ASSIGNMENT OF PHARMACY TECHNICIANS

CAPT C. V. Timberlake, Jr., MSC USN and LCDR Robert L. Smith MSC USN**.*

"WANTED: Handpicked, career-minded, well-motivated modern Petty Officers as candidates for Pharmacy School"

Thus possibly would read a want-ad, if we used such a system, to procure our pharmacy school candidates. The criteria may appear too exacting and idealistic but in this fantastic era of scientific advances and developments, particularly in the pharmaceutical industry, we feel there is a definite need for a more selective student to cope with the demands and challenges of this parade of progress.

Modern Needs

Not too many decades ago, the old Pharmacy and Chemistry School at the Naval Hospital, Washington, D.C. turned out a select group of pharmacy and chemistry technicians fairly well versed in both sciences. They served not only in the pharmacies of the major naval hospitals but were frequently called upon to perform as toxicologists and chemical researchers when the occasion arose. Those were the days before our medical research and preventive medicine units. Those were also the days when the medical officer had but a few potent selective agents and the pharmacist spent a considerable portion of his time compounding favorite "recipes" in the hopes of conquering the profusion of incurable maladies. Today, the pharmaceutical manufacturer is producing these time-consuming medicaments in tailor-made, ready-to-dispense form and the pharmacy technician is no longer primarily a compounder but more, a drug consultant.

With the products of modern pharmaceutical advances appearing en masse, the need for a highly trained, well motivated pharmacy technician is becoming more and more acute. This accelerated pace demands an academically trained man. We can no longer afford to take a likely prospect into the pharmacy as a striker and let him learn "on the job." He is not exposed to, nor does he master the finer points of the profession and eventually he will be at a loss without them, conceivably to the embarrassment of the medical officer or the command.

Selecton of Candidates

The present criteria for procurement of candidates for pharmacy school are: 1. volunteer, 2. high school graduate or equivalent, 3. combined GCT/ARI of 110, 4. sufficient obligated service (36 months), and 5. command recommendation for training. We feel that at times tolerant interpretation of items 3 and 5 have resulted in a number of students with boderline qualifications.

The volunteer requirement presents a twofold problem: (1) we are not getting a sufficient number of volunteers, apparently due to lack of recruiting at local levels, and (2) many of the candidates we do obtain have invalid ulterior motives ranging from additional shore-duty to escape from an undesirable duty station.

Waiver of the GCT/ARI requirement is by no means to the student's advantage. He is usually placed in a situation where he is at a disadvantage from the very beginning. Academic records indicate that this type of individual is a poor risk and will eventually be dropped for scholastic failure.

Finally, item 5, the recommendation, many times, appears to be given superficial consideration at best, if not automatic; the intent being lost along the way.

It is felt that our pharmacy officers and senior pharmacy technicians could greatly help alleviate these problems, since they in turn would be the ones to profit most by the finished product. These goals can be achieved by vigorous and realistic recruitment and personal interview.

Desirable Attributes

When recruiting, keep in mind the service usefulness to be obtained from each candidate. Why look for the bright young corpsman just out of basic school who, although possibly having a degree of higher education, still lacks naval experience? What about the young HM3 or HM2 on the eve of re-en-

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listment or discharge? It is possible that the same HM3 or HM2 who, having reenlisted, is now looking for a specialty, since he has made up his mind to make the Navy a career. We feel that we are overlooking a great number of promising young corpsmen who could be recruited for pharmacy school as an inducement for re-enlistment or beginning a career as a hospital corps technician.

As a possible guideline for interview, it is suggested that the candidate's educational background be thoroughly explored. Particular emphasis should be placed on chemistry and mathematics. The didactic training is centered heavily around these two sciences and 352 hours out of a total 672 are in these two particular subjects. Many hard working, well intentioned corpsmen have been assigned to this school who are incapable of doing even the simplest mathematical manipulation and appear to lack the basic ability to approach problems logically. These men, if graduated, would seriously jeopardize the medical profession when called upon to calculate the potent dosages of our modern drugs.

The courses in chemistry are designed to impart a basic understanding of drug composition to the student, so essential in the role as drug consultant. There are undoubtedly a few well motivated men who could satisfactorily complete the course, although lacking in these prerequisites. Statistically, however, they are rare indeed.

Needless to say, attributes of moral fiber and personal responsibility should be sought. To graduate a student with questionable motives and demonstrated traits of moral irresponsibility (military and civil infractions, marital experimentation, indebtedness and alcoholism) certainly is hazardous in this profession and eventually would prove embarrassing to his command.

Recruitment

It is felt that by recruitment and personal selection, every pharmacy officer and senior pharmacy technician in the field could recommend at least two candidates per year, thereby maintaining an adequate influx of students and graduates.

A program is presently being considered in San Diego whereby contact will be maintained with the student after graduation. His department head will be asked by periodic questionnaire to evaluate his performance in the light of present day needs. The results of these surveys obviously would aid the school in its mission. Emphasis could be shifted, broadened or adjusted as necessary to meet the demands of field activities.

Ultimate Duty Assignments

It is economically essential that the pharmacy technicians be utilized in their specialty upon graduation. From the technician's standpoint, his utilization in this field is vital for his morale and professional future. His training in pharmacy school constitutes only a foundation upon which he must build with learning and experience. Today's medicine demands that he maintain daily contact with technical advances in order to remain useful to the medical profession.

The proper procurement, training, and assignment of pharmacy technicians will directly influence the ultimate recipient of their services—the patient; without whom our profession would be quite unnecessary.

CHANGES IN ARMY PG COURSES

Navy participation in the course "Principles of Military Dental Research," to be conducted at the U.S. Army Institute of Dental Research, Walter Reed Army Medical Center, Washington, D.C.., 10-14 May 1965, has been cancelled, due to space limitations in classroom and in programmed field trips.

This change supersedes the announcement in Medical News Letter 44(8), 23 October 1964.—Training Branch, Professional Div., BuMed.

ANNUAL ANESTHESIOLOGY REVIEW SESSION FOR THE ARMED SERVICES

Location: Wilford Hall, U. S. Air Force Hospital, Lackland Air Force Base, Texas
Dates: 7 through 11 June 1965

This course is designed as a review for residents who have completed their training in Anesthesiology and desire to take the American Board of Anesthesiology Examination on or about 28 June 1965.

Requests should be forwarded in accordance with BUMED INSTRUCTION 1520.8A at least 8 weeks in advance of the convening date of the course. A limited number of eligible officers may be provided with travel orders to attend at Navy expense. Others may be issued Authorization Orders by their Commanding Officers following confirmation by the Bureau.—Training Branch, Professional Div., BuMed.

BRONZE STAR AWARDED TO LCOL BRUCE S. OTT

Washington, D. C. (AFIP)—LCOL Bruce S. Ott, Chief of the newly created Experimental Surgery Branch of the Armed Forces Institute of Pathology,



L-R: Brig Gen Joe M. Blumberg, Director of AFIP, Washington, D. C., presents Bronze Star citation to LCOL Bruce S. Ott, Chief of the Institute's Experimental Surgery Branch. Mrs. Ott and CAPT Bruce Smith, Deputy Director of the Institute, watch the presentation. (From: Technical Liaison Office, AFIP)

has been awarded the Bronze Star for meritorious service in Vietnam.

A grauduate of Michigan State University (DVM, 1946), LCOL Ott received the award for his outstanding performance as senior veterinary advisor to the Republic of Vietnam Armed Forces Veterinary Service during 1964.

The Bronze Star and citation were presented by Brig Gen. Joe M. Blumberg, Director of the Armed Forces Institute of Pathology, in special ceremonies attended by COL Stephen Asbill, Chief of the Army Veterinary Corps; COL Wilson M. Osteen, Deputy Assistant for Veterinary Services, Office of the Surgeon General; COL Robert C. Yager, Director of the Division of Veterinary Medicine, Walter Reed Army Institute of Research; and more than a score of key AFIP personnel.

The citation accompanying the Bronze Star stated: "Through his untiring efforts and professional ability, he consistently obtained outstanding results. He was quick to grasp the implications of new problems with which he was faced as a result of the ever changing situations inherent in a counterinsurgency operation and to find new ways and means to solve those problems. The energetic application of his extensive knowledge has materially contributed to the efforts of the United States Mission to the Republic of Vietnam to assist that country in ridding itself of the communist threat to its freedom."

A native of Allentown, Pa., LCOL Ott assumed his new duties as head of the AFIP Experimental Surgery Branch Jan. 21, 1965.

AID IN POISON IDENTIFICATION

An infrared spectrophotometer aids chemists at the Florida State Board of Health in identifying poisons, drugs, and narcotics. The instrument can "name" any one of over 20,000 organic substances in 10 minutes.—Public Health Reports 80(1): 10, January 1965.

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